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Electric propulsion fires over Pacific

by Ranney Adams, Propulsion directorate

EDWARDS AFB, CALIF. - A new space propulsion system was fired over the Pacific Ocean on March 15 for the first time by the Air Force.

The propulsion system being demonstrated is based on high-powered electric propulsion provided by a 26-kilowatt ammonia fueled arcjet. The demonstration is called the Electric Space Experiment, or ESEX.

The emerging technology is an effort by the Air Force Research Laboratory's Propulsion directorate and TRW, the prime contractor for ESEX, to demonstrate its use in space and evaluate its performance and interactions with other experiments on board an Air Force scientific satellite

AFRL's project manager, Daron Bromaghin, notified lab personnel of the first successful test in space on the afternoon of March 15.

"The arcjet ran perfectly," Bromaghin said. "We fired for 141 seconds and quit only because we were running out of time on the pass over Hawaii. We were at full power at more than 27 kilowatts and everything worked great."

The lab's electric propulsion researchers are gathering data at three different Air Force ground station sites while controlling the arcjet's space demonstration from the Air Force's Space and Missile Systems Center's space experiment control facility at Kirtland AFB, N.M.

Arcjet propulsion is based on creating a directed plasma in space. The simple system uses an anode/cathode design with a 26-kilowatt potential between the elements. Ammonia gas is released to "spark" the arcjet and the resulting plasma uses the gases to super-expand and create thrust.

The experimental propulsion system is part of the launch payload of an Air Force scientific satellite called Advanced Research and Global Observation Satellite or ARGOS. A Delta II rocket launched the new space satellite propulsion experiment on February 23 from Vandenberg AFB, Calif. @

SUCCESS IN SPACE - An artist's depiction of the ARGOS satellite firing an electric propulsion system. This depiction is similar to what scientists expect from the 26-kilowatt ammonia fueled arcjet as part of the Electric Space Experiment demonstration.